LOWER WILLAMETTE GROUP

Chairperson: Bob Wyatt, NW Natural
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September 3, 2009

Chip Humphrey
Eric Blischke
U.S. Environmental Protection Agency, Region 10
805 SW Broadway, Suite 500
Portland, OR 97205

Re: Response to EPA August 19, 2009 BERA Submittal Letter (Lower Willamette River, Portland Harbor Superfund Site, USEPA Docket No: CERCLA-10-2001-0240)

Chip and Eric:

Your August 19 letter (EPA 2009) requested that the Lower Willamette Group submit the draft Baseline Ecological Risk Assessment (BERA) for the Portland Harbor Superfund site as soon as practicable, without modifying it to address issues concerning the evaluation of benthic risk identified in an EPA email dated July 31, 2009. As requested, the LWG is submitting the BERA to EPA today.

This letter responds separately to EPA's August 19 letter. The draft BERA was formulated through collaborative efforts of EPA and the LWG, then produced by the LWG for EPA review. The formulation stage produced several milestones, including the BERA Problem Formulation (EPA 2008c), a tissue residue TRV derivation process and tissue TRVs (EPA 2008a, b), and methodologies for estimating benthic community risk (MacDonald and Landrum 2008). These efforts were helpful to the LWG in producing a draft BERA that aligns with EPA's stated expectations, and we hope that they will help streamline your review of the draft BERA.

The EPA-preferred approach to the evaluation of benthic risk referred to in your August 19 letter was not articulated in time for the LWG to incorporate into the draft BERA. EPA's July 17 and 31, 2009 communications identifying a difference between EPA's preferred approach to the evaluation of benthic risk and the approach that the LWG presents the draft BERA came at a point in time where it was impossible for the LWG to fully implement your preferred approach without delaying the draft BERA. The difference marginally affects bioassay hit classifications. The LWG feels that it is important to note that the approach presented in the draft BERA for evaluating benthic risk is consistent with prior instructions from EPA, and that the apparent discrepancies reflect changes to EPA's preferences. In particular:

- EPA's preference for normalizing bioassay mortality data has been reversed at least three times dating back to 2005.
    - The February 24, 2005 EPA-approved benthic approach stipulated that normalized bioassay mortality responses should be calculated as the difference

between test and control mortality (test – control). This is the method used in the draft BERA.

- A directive letter from EPA dated October 26, 2005 stipulated that normalized bioassay mortality responses should be calculated as the quotient of test and control mortality (test/control).

- A December 22, 2005 letter from EPA referred back to the February 24, 2005 benthic approach and stated that the normalization should be test - control. The LWG notes that both the difference method and the quotient method are standard methods, and believes that either method is reasonable, but that switching methods creates unnecessary rework and confusion, and creates the impression of substantive discrepancies where none exist.

- In EPA's 2008 BERA Problem Formulation, the normalization calculation was not specified, so the test-control method was used per the most recent direction from EPA.

- EPA's July 17, 2009 communication stipulated that normalized bioassay mortality responses should be calculated as test/control.

- EPA's preference for defining bioassay hits have changed several times since the February 24, 2005 EPA-approved benthic approach.

  - The February, 2005 EPA-approved benthic approach proposed using the freshwater RSET criteria (T-C > 10% and T-C > 25% for both mortality endpoints, Hyalella growth T/C <0.75 and T/C < 0.6, Chironomus growth T/C < 0.8 and T/C < 0.7).

  - The March 2006 Benthic Interpretive Report and the February 2007 Round 2 Report used EPA-directed hit definitions of 10%, 20%, and 30%.

  - EPA's February, 2008 BERA Problem Formulation defined hits as follows: response between 90 and 80% of control = "minor effect" response between 80 and 70% of control = "moderate effect" response < 70% of control = "severe effect."

  - On July 11, 2008 the LWG and EPA verbally agreed to the following hit definitions for the modeling effort: mortality increase >20% relative to control, Chironomus biomass reduction >30% relative to control and Hyalella biomass reduction >40% relative to control. It should be noted that in July the RI data were locked down and the modeling effort for the BERA had started. The July 11 verbal agreement was never reduced to writing.

  - In September 2008 the LWG received the MacDonald & Landrum report, which proposed defining bioassay hits relative to reference conditions (the "reference envelope approach"). The LWG and EPA agreed to use the reference envelope approach. Neither the MacDonald & Landrum report nor the Calcasieu Estuary BERA cited by MacDonald & Landrum fully defined the calculation procedures,

but the conceptual details were complete and the LWG implemented the reference envelop approach in a manner consistent with the information EPA had provided.

- Based on a request from EPA, the LWG explained the reference envelope approach used to define bioassay hits for the draft BERA and provided EPA the resultant hit thresholds during a June 18, 2009 teleconference. EPA expressed some concerns about the LWG's interpretation of the reference envelop approach and suggested that the LWG use an approach that would replicate the calculations presented in a table (Table E2-5) from the Calcasieu Estuary BERA. However, the calculations in that table could not be reproduced with the information presented in the Calcasieu Estuary BERA. Therefore, the LWG worked on and eventually succeeded in reconstructing the methods that had been used in Table E2-5. The LWG then verbally offered to revise the benthic BERA to conform to the Table E2-5 reference envelope calculation procedures. EPA did not respond to that offer so the reference envelope method for defining hit thresholds was not revised.

- EPA's July 17 and 31, 2009 communications defined new reference envelope calculation procedures for defining bioassay hits. These new procedures were inconsistent with EPA's standing directives regarding bioassay interpretation.

The LWG does not agree that the procedures stipulated in your July 17 and 31, 2009 communications are technically necessary or appropriate, or that they will substantively change the benthic interpretation in the BERA. The LWG would have preferred to eliminate the discrepancies between your preferred procedures and the draft BERA prior to submitting the document, but per your August 19 request (EPA 2009) we are submitting it without reconciling them.

The LWG has already engaged your team in an effort to reconcile the differences between the draft BERA procedures and your July 2009 procedures. We are hoping to discuss this issue in our next Portland Harbor managers meeting. We look forward to working out these differences quickly in order to help facilitate your timely review of the draft BERA.

Sincerely,

Bob Wyatt

cc: Confederated Tribes and Bands of the Yakama Nation
Confederated Tribes of the Grand Ronde Community of Oregon
Confederated Tribes of Siletz Indians of Oregon
Confederated Tribes of the Umatilla Indian Reservation

Confederated Tribes of the Warm Springs Reservation of Oregon
Nez Perce Tribe
Oregon Department of Fish & Wildlife
United States Fish & Wildlife
Oregon Department of Environmental Quality
LWG Legal
LWG Repository

References

EPA. 2008a. EPA letter dated August 5, 2008 to Lower Willamette Group (from E. Blischke and C. Humphrey to J. McKenna and R. Wyatt) regarding Portland Harbor RI/FS tissue TRV methodology, with attachments titled "Aquatic Tissue TRV response." Aquatic Biota Tissue TRV Derivation, and LWG Tissue TRV Response. US Environmental Protection Agency Region 10, Oregon Operations Office, Portland, OR.

EPA. 2008b. EPA letter dated June 13, 2008 to Lower Willamette Group (from E. Blischke and C. Humphrey to J. McKenna and R. Wyatt) regarding Portland Harbor RI/FS toxicity reference values methodology - aquatic biota tissue, with attachment titled "Aquatic Biota Tissue TRV Derivation.". US Environmental Protection Agency Region 10, Oregon Operations Office, Portland, OR.

EPA. 2008c. Problem formulation for the Baseline Ecological Risk Assessment at the Portland Harbor Site. Report and letter dated February 15, 2008 to Lower Willamette Group (from E. Blischke and C. Humphrey to J. McKenna and R. Wyatt). US Environmental Protection Agency Region 10, Oregon Operations Office, Portland, OR.

EPA. 2009. EPA letter dated August 19, 2009 to Lower Willamette Group (from E. Blischke and C. Humphrey to R. Wyatt) regarding Portland Harbor Superfund site: submittal of baseline ecological risk assessment. US Environmental Protection Agency Region 10, Oregon Operations Office, Portland, OR.

MacDonald DD, Landrum PF. 2008. An evaluation of the approach for assessing risks to the benthic invertebrate community at the Portland Harbor Superfund site. Preliminary draft. Prepared for US Environmental Protection Agency. MacDonald Environmental Sciences, Ltd., Nanaimo, BC, and Landrum and Associates, Ann Arbor, MI.